CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
SAN FRANCISCO BAY REGION

ORDER NO: 90-043

SITE CLEANUP REQUIREMENTS FOR:

KTI CHEMICALS, INCORPORATED
1170 SONORA COURT
SUNNYVALE
SANTA CLARA COUNTY

The California Regional Water Quality Control Board, San Francisco Bay Region, (hereinafter called the Board) finds that:

1. SITE DESCRIPTION KTI Chemicals Inc., owns and operates a chemical distribution facility at 1170 Sonora Court, southwest of the intersection of the Lawrence and Central Expressways in Sunnyvale, Santa Clara County.

2. REGULATORY STATUS KTI Chemicals Inc. (KTI), is referred to as a discharger because of their occupancy of the site for 16 years and use of chemicals that have been detected onsite in soil and groundwater. KTI has continued to operate the facility during site assessment and cleanup activities under Regional Board SCO 87-035.

3. SITE HISTORY The facility was constructed in 1973 to blend, filter and repack photochemicals for Santa Clara Valley industries. Three 8,000 gallon underground storage tanks were installed in 1979 and were used to store xylene, n-butyl acetate and mineral spirits. In 1983, KTI discovered a leak in a pipe union from the storage tank that contained odorless mineral spirits (OMS). The leakage resulted in the release of an unknown quantity of OMS to the soil, and ultimately to the groundwater. KTI, in 1983, initiated site hydrogeologic investigations which confirmed soil and groundwater pollution.

4. SITE INVESTIGATIONS A site hydrogeologic investigation was initiated in February 1983 to determine the extent of soil pollution and to evaluate whether groundwater had been affected by site activities. One monitoring well was installed adjacent to the three underground storage tanks. Subsequent groundwater sampling indicated the presence of odorless mineral spirits in the groundwater. Additional groundwater investigations were begun in 1984 with three soil borings, two completed as monitoring wells. To more fully define the subsurface geology and the lateral and vertical extent of soil and groundwater pollution, 8 monitoring wells and 36 soil borings have been drilled to date.

5. SITE GEOLOGY AND HYDROGEOLOGY The site is located on the bayland plain approximately 3000 feet east of Calabazas Creek. The upper 10 to 15 feet of shallow sediments consist primarily of low permeability silty clay intercalated with discontinuous lenses up to 2 feet thick of clayey to sandy silt and gravelly clay. This unit is underlain by a 7 to 16 foot thick highly permeable shallow water-bearing formation composed of

gravelly sand to sandy gravel descending about 30 feet below the surface. A blue gray clay aquitard of unknown thickness below the aquifer has been penetrated a maximum of 6 feet. Groundwater flow direction in the upper water-bearing zone beneath the KTI site is northeast to northwest.

6. SITE CHARACTERIZATION Field work conducted since 1983 has satisfactorily defined the lateral and vertical extent of the soil pollution. Soil borings drilled and sampled adjacent to the underground tanks have depicted the OMS distribution in the shallow sediments and capillary zone. Under SCO 87-035, additional soil sampling was conducted at locations downgradient of the source area which has revealed scattered pockets of OMS pollution. No further soil characterization is anticipated. Additional aquifer studies may be necessary to design a more efficient plume containment system and to define the free-product thickness on the water table.

7. INTERIM SOIL AND GROUNDWATER REMEDIATION Site interim remediation began in December, 1986 with the installation of a soil and groundwater bioremediation system. The system utilized a downgradient (north site boundary) groundwater extraction well, soil bacteria nutrient supplements added to the extracted groundwater and reinjection of the amended groundwater into the OMS leak area. The bioremediation system operated from December, 1986 to July, 1987 with limited success and was discontinued in July, 1987. The downgradient extraction well was also used to contain plume migration, and, is currently used to prevent offsite migration of the pollution plume. Operation of the bioremediation system's extraction well has enlarged the plume area due to aquifer drawdown and increased gradient beneath the site. A new containment system shall be designed to more precisely control plume migration and provide floating free-product removal.

   Site remediation for final soil cleanup actions includes the removal of the closed underground tanks and surrounding polluted soil. A rectangular prism of soil approximately 30 ft x 35 ft by 20 feet deep will be removed at the tank installation area. Additional polluted soil immediately north (downgradient) of the tanks will be removed. The excavation will be approximately 38 ft x 25 ft by 20 feet deep. Both excavated areas will remove polluted soil where free-product is found in the capillary fringe pore spaces. Actual dimensions of the soil removal areas may vary in order to protect the building foundation and to ensure that polluted soil at the desired concentration levels is removed. The objective for polluted soil remediation is to remove soil with OMS concentrations down to 100 ppm. It is anticipated that soil tests and groundwater monitoring will be required to verify that removal of OMS polluted soil to concentrations of less than 100 ppm will protect the groundwater.

8. The Board adopted a revised Water Quality Control Plan for the San Francisco Bay Basin (Basin Plan) on December 17, 1986. The Basin Plan contains water quality objectives and beneficial uses for south San Francisco Bay and contiguous surface and ground waters.

9. The existing and potential beneficial uses of the groundwater underlying and adjacent to the facility include:

   a. industrial process water supply
   b. industrial service water supply
   c. municipal and domestic water supply
   d. agricultural water supply

10. The existing and potential beneficial uses of Calabazas Creek and south San Francisco Bay include:

   a. industrial process water supply
   b. navigation
   c. recreation
   d. commercial/sport fishing
   e. warm fresh water habitat
   f. areas of special biological significance
   g. wildlife and marine habitat
   h. fish migration

11. The discharger has caused or permitted, and threatens to cause or permit waste to be discharged or deposited where it is or probably will be discharged to waters of the State and creates or threatens to create a condition of pollution or nuisance.

12. This action is an order to enforce the laws and regulations administered by the Board. This action is categorically exempt from the provisions of the CEQA pursuant to Section 15321 of the Resources Agency Guidelines.

13. The Board has notified the dischargers and interested agencies and persons of its intent under California Water Code Section 13304 to prescribe Site Cleanup Requirements for the site, and has provided them with the opportunity for a public hearing and an opportunity to submit their written views and recommendations.

14. The Board, in a public meeting heard and considered all comments pertaining to the Site.

IT IS HEREBY ORDERED, pursuant to Section 13304 of the California Water Code, that the dischargers shall cleanup and abate the effects described in the above findings as follows:

A. PROHIBITIONS

   1. The discharge of wastes or hazardous materials in a manner which will degrade water quality or adversely affect the beneficial uses of the waters of the State is prohibited.

2. Further significant migration of pollutants through subsurface transport to waters of the State is prohibited.

3. Activities associated with the subsurface investigation and cleanup which will cause significant adverse migration of pollutants are prohibited.

B. SPECIFICATIONS

1. The storage, handling, treatment or disposal of soil or groundwater containing pollutants shall not create a nuisance as defined in Section 13050(m) of the California Water Code.

2. KTI shall conduct site investigations and monitoring activities as needed to refine current local hydrogeologic data and extent of soil and groundwater pollution. Should monitoring results show evidence of plume migration, additional plume characterization shall be required.

3. Final cleanup levels and goals for polluted groundwater shall be background water quality if feasible, but shall not be greater than the DHS drinking water Action Level (AL) or Maximum Contaminant Level (MCL), whichever is more stringent. If an AL or MCL has not been established, the level shall be in accordance with the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California", based on an evaluation of the cost, effectiveness and a risk assessment to determine affect on human health and the environment, and shall be approved by the Board. State Board Resolution 88-63 definition of sources of drinking water may be applied in determination of final cleanup goal. These levels shall have a goal of reducing the mobility, toxicity, and volume of pollutants.

4. The dischargers shall optimize reclamation of any groundwater extracted as a result of cleanup activities, with a goal of 100% reuse, or pursue discharge to a local Publicly Owned Treatment Works. The dischargers shall not be found in violation of this Order if documented factors beyond the dischargers' control prevent them from attaining this goal, provided they have made a good faith effort to attain this goal.

C. PROVISIONS

1. The discharger shall comply with the Prohibitions and Specifications of this Order in accordance with the following task and time schedule:

TASKS AND COMPLETION DATES

a. TASK: INTERIM GROUNDWATER PLUME CONTAINMENT AND FREE-PRODUCT REMOVAL PLAN

Submit a technical report acceptable to the Executive Officer which contains proposals for the reconfiguration of the groundwater plume containment system that reduces movement of free-product across the site and incorporates an active free-product removal system. The report shall include a schedule of tasks necessary for the design and implementation of the new plume containment and free-product removal system.

COMPLETION DATE: June 30, 1990

b. TASK: RESULTS OF TANK REMOVAL AND POLLUTED SOIL EXCAVATION

Submit a technical report acceptable to the Executive Officer that summarizes the results of the underground storage tank removal and soil excavation that have been accepted as final remedial actions for source removal of odorless mineral spirits. The report shall include tabulated results of confirmatory soil tests, soil disposal manifests and estimates of OMS remaining as free-product in the soil. OMS remaining in the soil shall be evaluated as a pollutant point source for potential further impact on the groundwater.

COMPLETION DATE: July 31, 1990

c. TASK: IMPLEMENTATION OF GROUNDWATER PLUME CONTAINMENT AND FREE-PRODUCT REMOVAL MEASURES

Submit a technical report acceptable to the Executive Officer documenting completion of implementation of the groundwater containment and free-product removal systems as proposed under Task 1.a. and approved by the Executive Officer.

COMPLETION DATE: 90 days after the implementation date from the approved schedule in Task 1.a.

d. TASK: EVALUATION OF GROUNDWATER PLUME CONTAINMENT AND FREE-PRODUCT REMOVAL SYSTEM AND PROPOSED FINAL GROUNDWATER CLEANUP OBJECTIVES AND ACTIONS

Submit a technical report acceptable to the Executive Officer containing a feasibility study evaluating the performance of the installed groundwater plume containment and free-product removal system from Task 1.a., proposed alternative final groundwater cleanup objectives and actions and a proposed longterm groundwater monitoring plan. The report shall recommend a final groundwater remedial alternative(s) and outline the tasks and time schedule necessary for implementation.

COMPLETION DATE: March 1, 1991

e. TASK: IMPLEMENTATION OF FINAL REMEDIAL MEASURES

Submit a technical report acceptable to the Executive Officer documenting completion of implementation of final groundwater remedial actions.

COMPLETION: 90 days after the implementation date from the schedule in Task 1.d.

f. TASK: FIVE-YEAR STATUS REPORT

Submit a technical report acceptable to the Executive Officer containing the following:

1. The results of any additional investigative work completed,
2. an evaluation of the effectiveness of installed final cleanup measures,
3. additional measures to achieve final cleanup objectives and goals, if necessary,
4. a comparison of previously estimated costs with actual costs incurred and a revised projection of necessary tasks needed to achieve final cleanup,
5. the tasks and time schedule necessary to implement any additional final cleanup measures,
6. recommended measures for reducing Board oversight activities,
7. describe the reuse of extracted groundwater, if any, and,
8. evaluate and document the removal and/or cleanup of polluted soils, and groundwater.

If final cleanup objectives have not been achieved through the implementation of the approved groundwater and soil remediation plans, this report shall also

contain an evaluation addressing whether it is technically feasible to achieve these objectives with the approved remedial measures, and, if not, contain a proposal for alternative procedures to do so.

COMPLETION DATE: March 21, 1995

2. The submittal of technical reports evaluating remedial measures shall include a projection of the cost, effectiveness, benefits, and impact on public health and the environment. Remedial investigation and feasibility studies shall consider the guidance provided by Subpart F of the National Oil and Hazardous Substances Pollution Contingency Plan (40 CFR Part 300); Section 25356.1(c) of the California Health and Safety Code; CERCLA guidance documents with reference to Remedial Investigation, Feasibility Studies, and Removal Actions; and the State Water Resources Control Board's Resolution No. 68-16, "Statement of Policy with Respect to Maintaining High Quality of Waters in California"

3. If the dischargers are delayed, interrupted or prevented from meeting one or more of the completion dates specified in the Order, the dischargers shall notify the Executive Officer prior to the deadline for the completion date.

4. The discharger shall submit to the Board acceptable status reports in compliance with requirements of this Order. Reports shall be submitted on a quarterly basis.

(A) Each quarterly report shall be submitted on the last day of the month following the reporting period beginning with the first calendar quarter. The quarterly reports shall contain at least the following:

1. A summary of work completed since the previous quarterly status report,

2. a tabulation and logs of all new well construction data,

3. cumulative tabulation for volume of water extracted from groundwater extraction wells, chemical analytical results, and estimated pounds of chemicals removed,

4. updated potentiometric maps for all aquifers monitored, tabulated quarterly groundwater level measurements, and pollutant isoconcentration map, if applicable,

5. identification of any obstacles which may threaten compliance with this Order and what actions are being, or will be taken to overcome these obstacles, and

6. discussion of events of noncompliance with this Order, including proposed tasks and time schedule to achieve compliance, identified incomplete work

that was projected to be complete, and impact of noncompliance on complying with the remainder of this Order.

(B) ON AN ANNUAL BASIS, the last calendar quarter report due on January 31, 1991, and of following years, shall contain summaries of data, the past year's progress in compliance with requirements of this Order, and evaluate implemented cleanup measures and feasibility of meeting future goals.

5. All plans, specifications, reports, and documents shall be signed by or stamped with the seal of a registered geologist, engineering geologist, or professional engineer.

6. All samples shall be analyzed by a State certified laboratory or laboratory accepted by the Board using approved EPA methods for the type of analyses to be performed. All laboratories shall maintain Quality Assurance/Quality Control records for Board review.

7. The discharger shall maintain in good working order, and operate, as efficiently as possible, any facility or control system installed to achieve compliance with the requirements of this Order.

8. Copies of all correspondence, reports, and documents pertaining to compliance with this Order shall be provided to the following agencies:

   a. Santa Clara Valley Water District (Tom Iwamura)
   b. Santa Clara County Health Department (Steven Brook)
   c. State Department of Health Services/TSCD (Howard Hatayama)
   d. City of Sunnyvale (Helen Farnham)

9. The discharger shall permit the Board or its authorized representative, in accordance with Section 13267(c) of the California Water Code:

   a. Entry upon dischargers' premises in which any pollution sources exist, or may potentially exist, or in which any required records are kept, which are relevant to this Order.
   b. Access to copy any records required to be kept under the terms and conditions of this Order.
   c. Inspection of any monitoring equipment or methodology implemented in response to this Order.
   d. Sampling of any groundwater or soil which is accessible, or may become accessible, as part of any investigation or remedial action program undertaken by the dischargers.

10. If any hazardous substance is discharged to any waters of the state, or discharged and deposited where it is, or probably will be discharged to any waters of the state, the discharger shall report such discharge to this Regional Board, at (415) 464-1255 on weekdays during office hours from 8 a.m. to 5 p.m., and to the Office of Emergency Services at (800) 852-7550 during non-business hours. A written report shall be filed with the Regional Board within five (5) working days and shall contain information

relative to the nature of waste or pollutant, quantity involved, duration of incident, cause of spill, Spill Prevention , Control and Countermeasure Plan (SPCC) in effect, if any, estimated size of affected area, nature of effect, corrective measures that have been taken or planned, and a schedule of these activities, and persons/agencies notified.

11. Previous Order 87-035 is here by rescinded with adoption of this Order.

12. The Board will review this Order periodically and may revise the requirements when necessary.

I, Steven R. Ritchie, Executive Officer, do hereby certify that the foregoing is a full, true and correct copy of any Order adopted by the California Regional Water Quality Control Board, San Francisco Bay Region on March 21, 1990.

Steven R. Ritchie
Executive Officer